

00/521045

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
22 January 2004 (22.01.2004)

PCT

(10) International Publication Number
WO 2004/006774 A3

(51) International Patent Classification⁷: **A61B 8/00**

(21) International Application Number:

PCT/US2003/021899

(22) International Filing Date: 14 July 2003 (14.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/395,676

12 July 2002 (12.07.2002) US

(71) Applicant (for all designated States except US):
ISCIENCE SURGICAL CORPORATION [US/US];
1321 Waller Street, San Francisco, CA 94117 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **RACHLIN, Daniel**
[US/US]; 1654 Canna Lane, San Jose, CA 95124 (US).
CONSTON, Stanley, R. [US/US]; 148 Rogers Avenue,
San Carlos, CA 94070 (US).

(74) Agents: **SMITH, Gregory, Scott et al.**; Gregory Smith &
Associates, 3900 Newpark Mall Road, Suite 317, Newark,
CA 94560 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

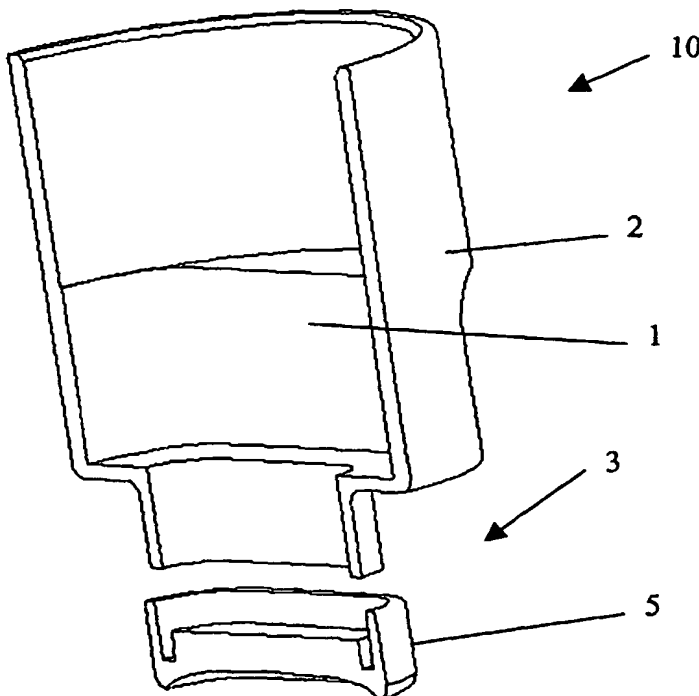
Published:

— with international search report

[Continued on next page]

(54) Title: **ULTRASOUND INTERFACING DEVICE FOR TISSUE IMAGING**

Cross-Sectional view of device with molded window component.



(57) Abstract: A device (10) used with high frequency ultrasound provides a replaceable barrier between the ultrasound transducer and the tissues being imaged. The device (10) provides an acoustic pathway of minimal effect on the ultrasound signals, and furthermore provides for a safety barrier between a mechanical scanner and the tissues being imaged. The configuration of the device (10) allows it to function as a standoff for the ultrasound transducer to place the focus of the ultrasound beam at the desired depth of tissue for imaging. In addition, the device (10) may be sterilized and replaced as needed, providing sterile tissue contact surfaces. The device (10) has additional features, which are especially advantageous for diagnosis and surgery of the eye.

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(88) Date of publication of the international search report:
10 June 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

/US 03/21899

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B8/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 867 169 A (MACHIDA KAORU ET AL) 19 September 1989 (1989-09-19)	1
Y	column 3, line 53 - column 4, line 53; figures 4-7	2,18
X	US 6 261 231 B1 (KAGAN MIKHAIL ET AL) 17 July 2001 (2001-07-17)	1
Y	column 2, line 15 - line 51; figures 1,2	2,18
Y	US 6 139 502 A (FREDRIKSEN PAUL SVERRE) 31 October 2000 (2000-10-31) cited in the application column 3, line 48 - line 51	2,18
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

9 October 2003

Date of mailing of the international search report

24 07 2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Abraham, V

INTERNATIONAL SEARCH REPORT

International Application No

US 03/21899

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 796 632 A (BOYD RONALD J ET AL) 10 January 1989 (1989-01-10) cited in the application abstract; figures 1-7 -----	1
A	US 4 722 346 A (CHEN JAMES N) 2 February 1988 (1988-02-02) cited in the application abstract; figures 1-3 -----	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/21899

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1,2,18

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1.2.18

An interface device for use with a high frequency ultrasound imaging system comprising a reservoir filled with a fluid coupling medium, a scan window, wherein the device is sterile.

2. claims: 3-8

An interface device for use with a high frequency ultrasound imaging system comprising a reservoir filled with a fluid coupling medium, a scan window, wherein details of the properties of the scan window are defined.

3. claims: 9,10

An interface device for use with a high frequency ultrasound imaging system comprising a reservoir filled with a fluid coupling medium, a scan window, wherein the length of the device is adjustable.

4. claim: 11

An interface device for use with a high frequency ultrasound imaging system comprising a reservoir filled with a fluid coupling medium, a scan window, wherein the distal end of the device is curved.

5. claim: 12

An interface device for use with a high frequency ultrasound imaging system comprising a reservoir filled with a fluid coupling medium, a scan window, wherein the distal end of the reservoir comprises one or more separate pieces between which is disposed the scan window.

6. claim: 13

An interface device for use with a high frequency ultrasound imaging system comprising a reservoir filled with a fluid coupling medium, a scan window, wherein the device incorporated delivery of acoustic coupling material.

7. claim: 14

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

An interface device for use with a high frequency ultrasound imaging system comprising a reservoir filled with a fluid coupling medium, a scan window, wherein the ultrasound frequency is in the range of 50-100 MHz.

8. claims: 15-17

An interface device for use with a high frequency ultrasound imaging system comprising a reservoir filled with a fluid coupling medium, a scan window, wherein the device incorporated access for surgical instruments.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

JS 03/21899

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4867169	A	19-09-1989	JP 63036173 A	16-02-1988
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